



2006 TOXICS STEERING GROUP ANNUAL REPORT TO THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY DIRECTOR

Change in Report Format

The format of this report has been modified to better meet the needs of the Michigan Department of Environmental Quality (MDEQ) Deputy Director, Jim Sygo, and of the Director, Steven E. Chester. It includes significant changes made to the Toxics Steering Group (TSG) policies and procedures and significant progress made by the TSG subcommittees in the past year.

I. INTRODUCTION

The purpose of the TSG is to provide a forum for discussion of human health risk assessment issues related to exposure to chemical contaminants in environmental media. The TSG will facilitate development of consensus recommendations based on sound science to relevant State of Michigan (State) department managers. The TSG will foster consistency of risk assessment applications within the MDEQ and between State agencies while minimizing duplication of effort. All toxicologists in the MDEQ are members of the TSG. In addition, the TSG includes membership from the Michigan Department of Agriculture (MDA), Pesticide and Plant Pest Management Division (PPPMD), and of the Michigan Department of Community Health (MDCH), Division of Environmental Health (DEH). (See page 9 for a list of 2006 TSG members). The TSG members from State agencies outside the MDEQ participate on several subcommittees. Efforts to coordinate with other agencies will continue to be pursued as opportunities arise. The purpose of this report is to describe the activities of individual members and subcommittees that have furthered the goals of the TSG.

II. ACTIVITIES

Education and Outreach

1) The MDA, the MDCH, and the MDEQ toxicologists provided numerous activities and displays during the Earth Day celebration, Bring your Child to Work Day, in April 2006. This has become an annual event opportunity for the TSG outreach and education on exposure and risk from toxic pollutants in the environment. A few highlights include the following activities and information related to mercury, asthma, pesticides, and water quality:

- "The Fishing Hole," a fishing game which showed the best way to catch a fish low in mercury;
- "Don't Get Home Sick," an Asthma Trigger House which showed examples of asthma and allergy triggers;
- "Bee Cool: Don't Mess with Pesticides!" showed ways to handle pesticides and to be safe;
- "Dining Daphnia," showed the crustaceans that are used to study water contamination through microscopy.

2) The Air Quality Division (AQD) toxicologists continue to promote the Clean School Bus USA program from the United States Environmental Protection Agency (U.S. EPA) by providing assistance to school districts seeking to implement school bus diesel reduction initiatives.

III. TRAINING

In-House Seminars

The TSG hosted U.S. EPA scientist, Dr. Annie Jarabek, for an Inhalation Dosimetry seminar in August 2006. There are many variables to consider when extrapolating the inhaled dose of a chemical between laboratory animals and humans, as well as between humans of different ages and susceptibilities. Dr. Jarabek was invited to aid the toxicologist's understanding of various options available for modeling inhalation dosimetry, as well as the pros and cons of each method for risk assessment.

Brown Bag Seminar Series

A monthly brown bag seminar series was established as a means to provide the TSG members an open forum for the review and discussion of new and innovative issues and advances in the science of toxicology and of risk assessment. The group meets at least once per month. This informal medium allows for a far more detailed level of discussion than time constraints permit during the regular quarterly TSG meetings. As such, it is expected to encourage educational cross-training opportunities and to support more consistent application of current risk assessment methodologies between department toxicologists. To date, this series has discussed the application and interpretation of chemical-specific benchmark dose modeling data interpretation, the historical and present environment of the TSG, and has provided an audience for a site case-study presentation.

Introduction to Benchmark Dose Software

Mr. Gary Butterfield and Ms. Maggie Sadoff organized and presented a half-day interactive workshop session on Introduction to Benchmark Dose Software for the TSG members. The members were led through a hands-on tutorial using several examples

of non-carcinogenic chemicals. The group gained a better understanding of how to utilize the U.S. EPA software, but all agreed that more training and discussion is needed to interpret the output and to ensure that benchmark dose methodologies are consistently applied across division programs.

Professional Meetings and Conferences

Ms. Sadoff attended the Society for Risk Analysis (SRA) annual conference held December 4-6, 2006, in Baltimore, Maryland. She shared information from the conference at the December 14, 2006, TSG Brown Bag seminar. Attendance at this conference was wholly subsidized by the SEIU Local Union, 517M Professional Development Fund. Ms. Sadoff paid her membership fee to the SRA. The SRA is an interdisciplinary professional society dedicated to the advancement of risk assessment, risk management, and risk communication. Conference sessions covered a wide variety of risk topics including application of uncertainty factors and margin of safety in risk analysis, approaches to internal dosimetry, risks of emerging technologies such as nanomaterials, and special considerations in assessing risks to children's health. A few key topics with relevance to the MDEQ programs were as follows:

- The current practice of applying a composite uncertainty factor to a human equivalent exposure concentration or external dose does not always result in a margin of safety reflective of the level of uncertainty in the risk assessment. Toxicity is better evaluated using internal dose (the concentration at the site of action or tissue dose), if available. Information from this session will be valuable to the Uncertainty Factors Subcommittee.
- Approaches to modeling internal dosimetry, dose-response for varying modes of action, and other sources of non-linearity were addressed. Based on what Ms. Sadoff learned, she recommends that the MDEQ toxicologists acquire training and develop expertise in these areas in keeping with the current state of the science in risk.
- A considerable number of sessions were devoted to assessing risks of nanomaterials and the regulatory and policy challenges that lie ahead in this area. Ms. Sadoff recommends that a workgroup be formed to monitor progress in regulation and policy, as well as technical advancements in the science and risk of nanomaterials.

Ms. Divinia Ries attended the 45th Society of Toxicology (SOT) annual meeting in San Diego, California. She presented a summary of the scientific programs from the meeting to the TSG on April 25, 2006. Attendance at this conference was partly paid for by the MDEQ. Ms. Ries paid her membership fee and lodging arrangements. The SOT meeting highlighted the latest in toxicological risk assessment including policies and strategies of federal and state agencies such as the U.S. EPA, the National Institute for Environmental Health and Safety, and the California Environmental Protection Agency. Ms. Ries provided abstracts from the meeting which are available for review by the TSG members.

IV. SUMMARY OF TSG SUBCOMMITTEE ACTIVITIES IN 2006

Children's Environmental Health Subcommittee (CEHS)

Chairperson: Mary Lee Hultin (AQD)

Members: Christina Bush (MDCH)
Mike Depa (AQD)
Brian Hughes (MDA)
Anne Kim (AQD)
Amy Merricle, Remediation and Redevelopment Division (RRD)
Amy Perbeck, Water Bureau (WB)
Divinia Ries (RRD)

This subcommittee is charged with tracking developments in the area of children's environmental health and with making recommendations to the TSG for incorporation into human health risk assessment procedures, as appropriate. The subcommittee chairperson regularly updates the TSG on current activities. The objectives of this subcommittee and associated actions since the last annual report include the following:

- 1) Provided comments on the U.S. EPA Proposed Lead Renovation, Repair and Painting Program Rule. The CEHS supported the effort to standardize renovations that potentially contained lead paint to which children could be exposed. The comments provided suggestions for alternative language that could result in improving the protective measures outlined in the proposed rule.
- 2) Provided comments on House Bill 5574, which proposed a ban on lindane for control of lice and scabies on humans. The CEHS concurred that its application to children should be avoided and suggested changes to the language of the bill.
- 3) Participated in the West Michigan Children's Health Initiative. This initiative was started in 2006 by the U.S. EPA Region V staff in an effort to create a pilot for enhancing collaborative efforts from diverse stakeholders to improve children's environmental health in a specific geographic area.
- 4) Provided recommendations regarding a school and day care with benzene levels in the indoor air as a result of contaminated soils. The soils are slated to be remediated. The process has the potential to increase benzene and other volatiles in the air. During the implementation of the CEHS recommendations within one division, the TSG procedural issues, such as appropriate level of review and requirements for consensus recommendations, came to light.
- 5) Recommended to the TSG that the U.S. EPA Early Life Supplemental Guidelines for Cancer Risk Assessment be incorporated as appropriate. When implementation of that guidance came upon substantial roadblocks, we worked toward resolving those by:
 - Contacting the U.S. EPA directly to seek further guidance.

- Incorporating information from the U.S. EPA, Office of Children's Health, Workshop on Children's Inhalation Dosimetry and Health Effects for Risk Assessment, which was held June 8-9, 2006, in Washington, D.C., and was attended by Ms. Mary Lee Hultin. The goals of that workshop were to review existing and emerging information on children's inhalation dosimetry, health effects and risk assessment; to explore and discuss new approaches for children's inhalation risk assessment practice.
- Bringing in Dr. Jarabek for training in inhalation dosimetry, since exposure measures are one of the problem issues identified in implementation of the children's supplemental guidance.
- Deriving a proposal for implementing the guidelines. Ms. Catherine Simon provided a presentation on the issue at the Region V Risk Assessors meeting in the fall of 2006. Although a recent draft U.S. EPA cancer guidance risk assessment for ethylene oxide contains calculations similar to those suggested by the AQD, the U.S. EPA has yet to final any guidance to help with the implementation issues. The subcommittee continues to pursue further guidance from the U.S. EPA on these issues.

6) Followed the Minnesota Department of Health Groundwater Rule Revision via teleconference and tracked their program changes, which aim to better incorporate children's exposure measures into their drinking water regulations. Minnesota is directly on the forefront of incorporating modifications to their rules which would modify drinking water criteria to ensure protection of children's health.

Concentrated Animal Feeding Operations (CAFO) Work Group

Chairperson: Linda Dykema (MDCH)

Members: Shannon Briggs (WB)
 Brian Hughes (MDA)
 Mary Lee Hultin (AQD)
 Maggie Sadoff (AQD)

At the request of Acting Medical Officer Dean Sienko, the TSG was asked to prepare a White Paper on the health effects associated with CAFO emissions. The document was prepared and released internally on May 10, 2006. The report is available on the Intranet in the TSG Teamroom.

Application of Manganese Particulate Soil Inhalation Criteria in the Detroit Area Subcommittee

Chairperson: Kay Fritz, Waste and Hazardous Materials Division (WHMD)

Members: Christina Bush (MDCH)
Robert Sills (AQD)
Divinia Ries (RRD)

Ad Hoc Members:

Deborah MacKenzie-Taylor (WHMD)
David Mason (AQD)
David Slayton (WHMD)

This subcommittee was initiated pursuant to a discussion at the April 2006 quarterly TSG meeting, which identified some challenges associated with the application of the Particulate Soil Inhalation Criteria (PSIC) for manganese (Mn) at several large facilities in the Detroit area. The subcommittee started officially as a TSG Workgroup in May, with an aim to evaluate the derivation of the Mn PSIC values for application in Michigan, especially in the Detroit area, to ascertain if those PSIC values are appropriate or if revisions may be justified. The first report of the workgroup, which included its rationale, purpose, and proposal, was presented at the July 2006 quarterly TSG meeting. At that meeting the workgroup was changed to a subcommittee. This subcommittee met for a total of six meetings this calendar year, during which the Scope of Work (SOW) was established and inaugurated. The SOW includes:

- Investigation, evaluation, and interpretation of current knowledge regarding the Mn PSIC: a) examination of all relevant Mn data, b) assessment of the Mn PSIC methods, including assumptions and algorithms, and c) investigation of applications of the PSIC by governmental entities other than the MDEQ.
- Completion of a report detailing findings and recommendations to be presented to the TSG for consideration. This report will also indicate if the findings support a "no further action," a briefing for upper management, a mechanism for stakeholder input, or other course of action.

This subcommittee has also been involved in discussions on the PSIC issues relating to the Downriver (Ecorse and River Rouge) Soil Study, a RRD project managed by Mr. Steven Hoin. Three additional people have been added to this subcommittee as ad hoc members to help with the SOW.

Uncertainty Factors in Non-Cancer Risk Assessment Subcommittee

Chairperson: Robert Sills (AQD)

Members: Dennis Bush (WB)
Deborah Mackenzie-Taylor (WHMD)
Maggie Sadoff (AQD)
Divinia Ries (RRD)

The charge of this subcommittee may be summarized as follows:

- To evaluate the U.S. EPA's justification and practice for applying an uncertainty factor (UF) to account for inadequacies in a substance's toxicity database (UF_D).
- To provide a recommendation and rationale for the potential use of the UF_D by the MDEQ toxicologists in the development of environmental criteria and standards for human health protection.

The UF_D is not one of the U.S. EPA's traditional UFs, but it has been utilized by the agency since the mid-1990s in the derivation of non-cancer reference values. This subcommittee was formed to evaluate the basis for applying this additional UF in the context of the overall UF scheme involving four other UFs. The subcommittee has drafted a report on this issue, and is in the process of updating the literature search and making other report revisions. The subcommittee expects to have a final draft for full TSG review by December 2007.

Polybrominated Diphenyl Ethers (PBDE) Subcommittee

Chairperson: Christine Flaga (RRD)

Members: Dennis Bush (WB)
Kory Groetsch (MDCH)
Deborah Mackenzie-Taylor (WHMD)
Catherine Simon (AQD)

This subcommittee released its final draft report in January 2007. A copy of the report can be accessed on the TSG homepage at http://www.michigan.gov/deq/0,1607,7-135-3307_29693_32185---,00.html. This report represents an update to the report completed in January 2004. Although updated information is provided for all PBDEs, the 2007 report focuses on Deca-BDE, since information was sufficient in 2004 to support legislative bans for Penta- and Octa-BDEs only. The 2007 report also includes a quantitative risk assessment, which was not provided in the previous report. Seven recommendations were made including one to support legislation banning Deca-BDE.

V. TSG POLICIES AND PROCEDURES

A recommendation was made to update the TSG policies and procedures to reflect current procedures. A final document must be approved by the MDEQ Deputy Director Sygo and presented to Director Chester for his review and approval. The major change recommended was that the TSG report directly to Deputy Director Sygo (rather than the usual chain of command through each division). Deputy Director Sygo would then share the TSG recommendations with the Senior Management Team, as appropriate.

VI. TSG NEEDS AND RECOMMENDATIONS FOR 2007 AND BEYOND

The TSG recognizes that budget constraints and other departmental priorities may delay or preclude the following requests. However, we feel it is necessary to acknowledge the fact that in order to continue to incorporate the best available science in our recommendations and assessments, the TSG members must be able to keep their expertise honed, as the field of risk science continues to evolve.

In order to fulfill our mission and to better serve the public, the TSG members would like to see more emphasis placed on joint training and coordination of information and knowledge dissemination. Establishment of the TSG brown bag seminars is one step toward this goal. Training could also be in the form of in-house training by outside experts, the purchase of educational CD/DVDs, on-line courses or "train the trainer" type education, where one or more core staff are approved for travel to key conferences and seminars and then bring knowledge back to the group. Examples include training in the following key risk science principles:

- Physiologically Based Pharmacokinetic (PBPK) modeling. The use of PBPK models in risk assessments prepared by outside groups such as the U.S. EPA and the regulated community is steadily increasing. At a minimum, all staff should have sufficient knowledge to review these outside assessments. In addition, the TSG should have core staff trained to add PBPK modeling to in-house risk assessments where applicable.
- Epidemiology and probabilistic risk assessment for the reasons stated above. Alternately, the MDEQ could hire an epidemiologist and or biostatistician to be shared among the divisions. The MDEQ, specifically the RRD, previously had a statistician on staff, but this position remains open, and we are currently contracting out for this service. There is a critical need for a biostatistician who could be shared across divisions. A similar shared funding arrangement is in place for the librarian service within the MDEQ.

No recommendations will be made to the Director at this time. However, recommendations will be discussed in 2007 for inclusion in the next Annual Report.

2006 TOXICS STEERING GROUP MEMBERS

Deputy Director Jim Sygo, MDEQ

Chairpersons: Gary Butterfield, MDEQ, AQD
Amy Merricle, MDEQ, RRD

MDA, PPPMD
Brian Hughes

MDCH, DEH
Christina Bush
Linda Dykema
Kory Groetsch
Erik Janus
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